Patent Claims

1. A manufacturing system, in particular a rotary friction welding machine for joining two components, having two subsystems to be aligned with one another,
characterized in that an adjusting device (24; 30) having two interleaved frames (25, 26; 31, 32) is assigned to one of the two subsystems to be aligned, two groups (27, 28; 33, 34), each having at least three actuators (29; 35), being positioned between the two frames (25, 26; 31, 32) of the adjusting device at an axial distance from one another.

2. The manufacturing system as recited in Claim 1,
characterized in that the two interleaved frames (31, 32) are designed as concentric tubes having a ring-shaped cross section, two groups (33, 34), each having at least three actuators (35), being positioned between the two tubes at an axial distance from one another.

3. The manufacturing system as recited in Claim 1,
characterized in that the two interleaved frames (25, 26) are designed as tubes having a rectangular cross section, two groups (27, 28), each having at least four actuators (29), being positioned between the two tubes at an axial distance from one another.

4. The manufacturing system as recited in one or more of Claims 1 through 3,
characterized in that the actuators (29, 35) are fixedly connected to at least one of the interleaved frames (25, 26; 31, 32).

5. The manufacturing system as recited in Claim 4,
characterized in that the actuators (29, 35) are fixedly connected to one of the interleaved frames (26, 32) and are movable with respect to the other frame (25, 31).

6. The manufacturing system as recited in one or more of Claims 1 through 5,
characterized in that the actuators (29, 35) are designed as piezoelectric actuators.

7. The manufacturing system as recited in one or more of Claims 1 through 6, characterized in that a shaft of the respective subsystem is supported in the inner frame (25; 31) of the two interleaved frames of the adjusting device (24; 30).

8. The manufacturing system as recited in one or more of Claims 1 through 7, characterized in that an adjusting device (24; 30) is assigned to each subsystem to be aligned with one another, a shaft of one of the two subsystems to be aligned being supported in the inner frame (25; 31) of each adjusting device (24; 30) and the shafts of the two subsystems to be aligned being designed to be rotatable and/or stationary.

9. The manufacturing system as recited in one or more of Claims 1 through 8, characterized in that the relative position of the subsystems to be aligned with one another is continuously measurable and that the two subsystems to be aligned with one another are dynamically aligned during the operation of the manufacturing system via the or each adjusting device (24, 30) as a function of an appropriate measurement.

10. The manufacturing system as recited in one or more of Claims 1 through 9, characterized in that it is designed as a rotary friction welding machine having a first spindle (14) and a second spindle (15), the first spindle (14) and the second spindle (15) forming the two subsystems to be aligned with one another, a first component (11) of the components (11, 12) to be joined together being supported on the first spindle (14) and a second component (12) of the components (11, 12) to be joined together being supported on the second spindle (15), and an adjusting device (34; 30) having two interleaved frames (25, 26; 31, 32) being assigned to the first spindle (14) and/or to the second spindle (15).

11. The manufacturing system as recited in Claim 10, characterized in that the relative position of the first spindle (14) and the second spindle (15) or of the components (11, 12) to be joined together is measured continuously and that the two spindles (14, 15) or the two components (11, 12) to be joined together are dynamically aligned during operation of the rotary friction welding machine via the or each adjusting device (24; 30) as a function of the measurement.